Schematics for various RAM cards for HP Computers

These schematics were obtained from the owner of the company KGM, Germany, Mr. Ulf Kumm.

In the 1980s, KGM produced various RAM boards for HP and other computers. These boards offered higher capacity and/or lower costs - RAM chips were rather expensive in these days.

The scans were made by Martin Hepperle, 2024

List of files:

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 1.2 MB    KGM-MEM1024A-1MB-Memory-Advertisment-HP-9000-200.pdf
14.4 MB    KGM-MEM256A-256kB-Memory-HP-98x6 - 1982 (1) - Sheets.pdf
18.1 MB    KGM-MEM256A-256kB-Memory-HP-98x6 - 1982 (1) - Combined.pdf
23.9 MB    KGM-MEM256A-256kB-Memory-HP-98x6 - 1982 (2) - Sheets.pdf
12.5 MB    KGM-MEM1000A-1MB-Memory-HP-98x6 - 1982 - Sheets.pdf
14.2 MB    KGM-MEM1000A-1MB-Memory-HP-98x6 - 1982 - Combined.pdf
14.3 MB    KGM-MEM4-MEM12-4-12MB-Memory-HP-9000-200.pdf
 8.5 MB    KGM-MEM4-MEM12-4-12MB-Memory-HP-9000-200 - Combined.pdf
 1.9 MB    KGM-MEM4-MEM12-4-12MB-Memory-HP-9000 - Modification Note.pdf
 4.6 MB    KGM-2-4MB-Memory-HP-9000-200 - Sheets.pdf
 1.1 MB    KGM-512kB-Memory-HP-9845.pdf
 1.4 MB    KGM-68M1-1MB-Memory-mc68000.pdf
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Note: the mc 68000 was a semi-professional do-it-yourself computer family for which schematics and software had been published by the German magazine "mc")

Some additional background information: the developer of the RAM boards, Ulf Kumm, writes:

> *"Only very few of the mc68000 were produced, it was an exotic, handicraft project.*
>
> *The 512kB boards for 9845 were mostly distributed by the company Cleophas Hofheim but also directly.*
>
> *I did the design all myself. From about 1981 to 1985, while I was a student. There was no CAD or PC back then, and the drawings were only for my own internal purposes. I glued the layout 2:1 on raster film with 0.85 mm tape ("Digiraster"). There were 4 or 6 layers. The brown marker lines on some of the schematics were drawn during the layout as a crosscheck.*
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> *First, I replaced 16k with 64kBit RAMs (512kByte instead of 128k for 9845 and 256k instead of 64k for HP 9000/200); later there were also 256k chips (1 MByte for HP 9000/200) and 1 Mbit (4 MByte).*
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> *I bought the first 256 kBit RAMs for 250 DM per chip, for the 1 Mbit chips I was the first and largest customer in Europe. At least for a few months. When I received the first samples of these ICs, the boards were already ready for assembly. We assembled the boards on polystyrene boards from the DIY store on the living room table. A few friends were invited for assembly and for coffee and cake later.*
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> *Next, I loaded the styrofoam stacks with loosely assembled circuit boards into the Renault R4 and drove them to a small company on the 4th floor where there was a soldering wave. Then I put everything in the dishwasher at home and tested 8 pieces at a time in the computer, around the clock, 1 hour test time per board."*